THE VETERINARY RECORD

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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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THE INDIAN CIVIL VETERINARY DEPARTMENT

We have more than once referred to this department which has been formed through the efforts of Mr. Hallen. India offers an immense field for the utilisation of veterinary talent, but it also presents very great difficulties. Contagious diseases prevail widely amongst the domestic animals and cause the very gravest losses; religious feeling prevents a large section of the natives from willingly adopting compulsory slaughter as a means of stamping out these plagues; most primitive customs and methods of agriculture are adopted, and changes are very slowly effected. Horses are not much used on the farms, and breeding is carried out on the most elementary principles—or perhaps we should say on none at all. The value to the country of a well organised veterinary department cannot be over estimated. Improvement of stock, better methods of farming. and protection from devastating diseases should all follow upon the work of the skilled veterinarian. Of course the success of the department will be in exact proportion to the skill of its members, and first-class men are only to be obtained by fair remuneration. The Civil Veterinary Department proposes to select its officers from the military veterinary surgeons in India, and in this way to ensure that they shall be men of experience and undoubted capacity. Unfortunately the Indian Government for some reason is not trusted, and it has been stated that veterianians fear to exchange their definite appointment in the Army for the indefinite appointments offered by the Civil government. Pay and pensions, it was said, were not sufficient, and rules for leave of absence had been entirely forgotten. We hear now that regulations will shortly be issued putting the scale of pay and pensions on a definite and fair footing—such as may be accepted by any prudent man. We are not in a position to say whether the question of leave has also been arranged but we hope it has. It would be a pity to spoil the ship for a ha'poth of tar. The good to India from a first-rate veterinary department is a matter beyond doubt. The only question is whether the arrangements are such as to attract good men, and we are assured that they are—or soon will be.

THE REGISTRATION OF FARRIERS.

From Ireland and from the North of England we have had complaints of the way in which this scheme is being carried out. From the metropolis also we have heard anything but favourable reports. On another page will be found a letter from Mr. H. G. Rogers who makes several serious accusations which ought not to pass unchallenged. He states that at a recent examination "a candidate was successfully disposed of in twelve minutes. . . . . without having handled a tool or made or put on a shoe." He asserts that "a candidate can be passed, registered as R.S.S. and receive an imposing certificate by simply paying his fees and replying to a few elementary questions over a table." When we consider that the registration committee includes six members of the Royal College of Veterinary Surgeons and that their advice guides the committee in its action, this is a statement which should be accepted only on strong evidence. Mr. Rogers' letter, if his facts are right. simply goes to show that the registration scheme is a shameful farce, and that our profession by its representatives countenances deception. It the public are told that the letters R.S.S. may be taken to indicate a farrier whose skill is greater than usual, whilst the real fact is that the holder of the letters may not be able to make a horse-shoe or nail it on the foot, we must at once look to our professional reputation.

Mr. Rogers may, however, be misinformed, and it is desirable that some explanation or denial should be offered by the Registration Committee. Our representatives on that body are Professor Axe, Dr. Fleming, Sir Henry Simpson, Messrs. Wragg, Cox, and Barford. We believe that the examiners entrusted with the testing of all farriers before registration are entirely veterinarians, and that Dr. Fleming and Mr. Barford acted at the recent examination to which Mr. Rogers refers.

To certify a farrier as specially skilful and to present him with a large diploma for exhibition, *when he cannot make a shoe or shoe a horse*, is a fraud on the public, and a proceeding the Royal College must discountenance.

THE FELLOWSHIP.

After all that has been said about the Fellowship Degree and the ease with which it is obtained, some surprise has been expressed at the unanimous re-election of the examiners. We believe the explanation of the Council's action is that the appointment is only for a year, and that it was inadvisable to make any alteration until after the election of the Examining Board which takes place next January. The question of examination for the Membership occupies the whole field just now but the question of the Fellowship will be thoroughly, gone into as soon as the larger matter is decided.

CASES AND ARTICLES.

THE REGISTRATION OF SHOEING SMITHS.

By H. G. Rogers, M.R.C.V.S.

In March 1890 the Worshipful Company of Farriers drew up a scheme for improving the trade of Shoeing Smiths. The scheme provides for (1) examining, (2) registering, (3) instructing, (4) assisting to apprentice. A committee of 24 was appointed, in which the working farrier might be represented by four members, two from the Amalgamated Farriers' Union, and two from the roll of Registered Shoeing Smiths.

In February 1891, the trade did not appear to have availed itself of the opportunity, no member directly representing it appears on the committee list.

That the committee grasped the necessity of examining a handicraftsman practically is shown by their advice to Agricultural Societies which might establish Shoeing Competitions. They suggested that each competitor make a fore and hind shoe, take off a fore and hind shoe and put on new ones; that the men should provide a striker, and tools, and that the Society should provide forge, anvil, iron, nails and fuel; and that the time in forging and fitting be considered.

In August, 1891, the Register shows over 3,000 names, of which 122 were admitted because they had won prizes or been commended at shows. 12 had been examined and passed by the organization. The remainder about 2,860 were registered because they had five years previous experience of the trade, and had lodged two testimonials from gentlemen who had employed them for two years.

Registered men were entitled to use the letters R.S.S. after their names, and the committee anticipated that large horse owners and the public would give them preference. But it may here be asked can any method short of actual practical test confer a status guaranteeing the public an average efficiency? I venture to say that those who looked for examinations to improve the handicraft of farriery will be amazed, and hardly prepared to believe the following facts about the recent examination: This examination was *viva voce*. A candidate was successfully disposed of in twelve minutes. The place was a small room in the Worshipful Company's Office, 9 Laurence Pountney Hill, E.C. After seven in the evening a man could be passed as an efficient horse-shoer without having handled a tool, made or put on a shoe, and without having seen a horse during his examination. A competitor can be passed, registered as R.S.S. and receive an imposing certificate by simply paying his fees and replying to a few elementary questions over a table.

It is difficult to understand why an examination worthy of the name was not instituted, as the committee has not erred through ignorance. The rules suggested to other societies in 1891 show a thorough grasp of the requirements, and a clear elaboration of detail. One asks why, after suggesting methods necessitating actual display of the skill of the farrier, the committee accept as proof of capability a few minutes conversation with an examiner, and do not submit the candidate to a single test in the practical details of his trade. Is such examination going to benefit the trade or bring credit to any body of men? Is the R.S.S. any guarantee to horse-owners, master farriers or the public, that the Registered man is in any way worthy of preference?

VETERINARY BOTANY.

By W. Hunting, F.R.C.V.S.

It is rather widely assumed that a knowledge of "Veterinary" Botany is necessary to a properly qualified Veterinary Surgeon. As in all other questions, so in this, we shall best arrive at the truth by first defining what we mean by the term. It is agreed that a mastery of the Science of Botany is not requisite in a Veterinary Surgeon but it is said that some knowledge is essential—that all practitioners should be able to detect poisonous plants and should know the value of the various food plants. This may be granted at once. No one has ever disputed that such knowledge is requisite, but to obtain this knowledge can we rely upon the Science of Botany? Does Botany include the information which Veterinarians require concerning poisonous and food plants? Is there a "Veterinary" Botany which leaves out of consideration all the useless matter but which includes the practical information so useful to a practitioner in the country? The answer to this question may be obtained by a perusal of text books, and I have failed to find in any text book the information desired. If Botany is to be taught as a Science it must follow the text books and must be taught by a Botanist. Now no text book gives the information about oats and hay or about yew and aconite, which is requisite for a Veterinarian; nor have I yet met the Botanist who would profess to supply that information in lectures. Of course it is possible to find men who know enough of dietetics and of toxicology to teach students these subjects and to add a sort of elementary botanical science which may by a perversion of language be called lectures on Botany. This sort of jumble is not Science, and it simply distracts students from the essential knowledge they ought to have by making unduly prominent a mass of learning of no practical value. The recognition of grasses and weeds is not botanical knowledge, the understanding of their feeding value or deleterious properties is not within the scope of Botany. The value of hay or oats or beans may be quite unknown to a clever Botanist, whilst the ability to recognise and classify their botanical elements is quite useless to the practical man, who only requires to know a bad sample from a good one and to recognise their feeding values. So-called "Veterinary" Botany does not exist as a Science,

and as a subject for veterinary students should by broken up into its proper divisions. Dietetics includes a useful knowledge of food plants. Toxicology and Materia Medica are the only places for poisonous and medicinal plants. If we want a subject properly taught. it must be taught under its proper name and by a man who understands it. If we want Botany taught as a Science it must be taught by a botanist, and then we cannot expect dietetics and materia medica included. On the other hand if we want practical information concerning food and medicinal and poisonous plants we must not be satisfied with the teachings of a botanist who knows nothing about them. When a subject of great importance is made a sub-section of a course of lectures on a Science only distantly allied to the Veterinary Art, we may be certain it will be neglected. Only when subjects of first importance are treated as separate subjects can we expect them to be handled in such a manner as to repay the trouble of learning. Scientific Botany no one wants. "Veterinary" Botany is a jumble of subjects which can only be mastered when separately taught. Dietetics and toxicology, to say nothing of materia medica, must be acknowledged as quite outside a course of Botany, and we must be careful not to confuse the meaning of words but to recognise clearly that allied Sciences are only useful when possessing a direct practical connection with Veterinary Science

LAMINITIS IN MARES AFTER FOALING.

By H. G. Bowes, Student.

During the past month I have had the opportunity of seeing four or five cases of septic laminitis in mares after foaling; but these cases differed from those recorded by Messrs. Hunting and Young insomuch as the membranes were not retained, with the exception of one case.

In the other cases the membranes came away shortly after foaling; and of the whole lot, the mare which had the most severe attack was the one which had parted with the placenta soonest, in fact immediately after foaling, and she has not yet recovered, after being bad several weeks.

Perhaps some of your readers may be able to account for this. It may be that a portion of the placenta had been retained and decomposing had given rise to the septic matter which was certainly present as evidenced by the fœtid discharge.

VETERINARY SOCIETIES.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

An ordinary general meeting of this prosperous association was held on Friday, June 24th, Maidenhead being the place of meeting on the invitation of the genial and popular Mayor of that town, Mr. James F. Simpson, F.R.C.V.S.

Before business, those present were most hospitably entertained at the Guildhall to a récherché luncheon by Mr. Simpson, who occupied the chair, and wore the handsome gold mayoral chain. At the close of the repast, the chairman said they were not accustomed to have many speeches on those occasions, but whenever Englishmen gathered together the health of Her Majesty the Queen was submitted. Veterinary surgeons were essentially loyal subjects of Her Majesty, and they as members of the Royal Counties Association, assembling as they did in one of the Royal Counties, would, he was sure, drink that toast with great enthusiasm. (Applause.) The toast having been honoured, the chairman asked the company to drink with him the health of their president, Mr. Lepper, and success to their association. He was sorry he had not the honour of welcoming a larger number than he saw that day, but the cause was easily explained. Apart from their ordinary professional duties a great many veterinary surgeons had indulged in a visit to the Royal Agricultural Society's show that week, and having spent perhaps a couple of days out of their practice felt they could not spare another day that week. He thanked those who had been able to honour him with their presence and who came to hear what he anticipated would prove a most interesting paper. (Applause.)

Mr. Lepper said he should be indeed ungrateful if he did not thank the Mayor very much indeed for the kind way in which he had been good enough to propose the health of the association, and as he was told not to make a speech he would at once proceed to ask them to drink to the health of their very worthy host that day. (Applause.) He was sure he was expressing their wishes and fulfilling their desires when he asked them to join in offering their most hearty and sincere thanks to him for his kind entertainment and generous hospitality. (Hear, hear.) They rejoiced to think he occupied the high position of chief magistrate of the town in which he resided, and they hoped he might live long to enjoy the respect and esteem in which he is so universally held. (Cheers.) The toast was most cordially drunk, with cheers for the Mayor and Mrs. Simpson.

The Mayor begged first to thank their president for the very kind and flattering way in which he had submitted that toast, and all the company for the kind reception they had given to his name. It had afforded him the very greatest pleasure to welcome them to the town over which he had the honour this year of presiding as chief magistrate. That was a privilege which unfortunately rarely happened to members of their profession; but he had hope that as time went on more members of the profession would interest themselves in public matters, and in the endeavour to serve their country as good citizens, accept such public offices as were offered to them. (Hear, hear.) There was an opinion that the acceptors of offices of the kind he held were lazy men, or that they had no practice. (Laughter.) His experience of life had been that the busiest man was the man who had most time to spare. That might sound somewhat Irish, but it was perfectly true that the man who had a good deal to do found time, somehow or other, to devote to public services. (Hear, hear.) He was very much obliged to them for the kind way in which they had received his name, and he could assure them it had given him as much pleasure to receive the members of the Royal Counties Veterinary Medical Association as it did on the previous occasion when he had the honour of entertaining them in his house. If at any other time they should decide to make Maidenhead their place of meeting it would give him great pleasure to receive them again. (Cheers.)

The meeting followed in the Council Chamber. Present: Mr. H. G. Lepper (president), Sir Henry Simpson, Messrs. J. F. Simpson, J. D. Barford, W. Wilson, Albert Wheatley, A. Sants, F. W. Hanks, Jas. East, Jno.

Varney, F. W. Willett, Chas. Carter, A. L. Butters, S. H. Slocock, J. Sutcliffe Hurndall (hon. sec.), P. Irving, Wood Page, T. B. Goodall, R. Page Butt, E. Langford, Wm. Hunting, A. E. Barlow, E. C. Howard. Visitors: Capt. Raymond, Messrs. T. B. Hamilton, Jno. Hatch, T. J. Arman, Edwin Faulkner, Manchester; and Professor Smith, Aldershot.

After the transaction of routine business the hon. sec. announced apologies from Prof. Walley and Prof. McCall, and read a communication from the Central Veterinary Medical Society in favour of higher education and of a four years course of study, but its consideration was deferred to the next meeting.

The petition of Prof. Jas. McCall and Prof. William Williams against the proposed scheme of higher examination for admission to the profession, was similarly dealt with.

Mr. J. F. Simpson nominated for election at the next meeting as members of the association Mr. H. G. Rogers, London; Mr. Hatch, Beaconsfield; and Mr. Owen, Thame.

The following important paper, illustrated by a great number of specimens, was then read.

"THE NASAL CHAMBERS AND FACIAL SINUSES OF THE HORSE."

By Thos. B. Goodall, F.R.C.V.S., Christchurch.

When our Secretary honoured me with an invitation to prepare a subject for discussion at this meeting, I was, through what might be termed an accidental circumstance, engaged in making a few notes on the Nasal Chambers and Facial Sinuses of the Horse; and as the result of these observations leads me to adopt a different view to those generally accepted as to the causation of diseases of these parts; and also seems to point to a slight modification in our methods of treatment, this appeared to me an excellent opportunity of bringing the notes before the profession in the form of a short paper. Moreover, one or two anatomical and physiological facts that are of importance, and which, if I may judge from my own experience, have not been sufficiently noticed, either in our standard works, or in the curriculum of our Schools can be more satisfactorily described by a demonstration with specimens before a body of experts such as one would hope to find at one of these Societies' Meetings than if these notes had been sent for publication in one of the journals.

As the subject matter is still fresh on the minds of some of our members and friends, let us hope that real practical good may be gathered from the discussion that will follow my remarks. In giving expression to views that may seem to be antagonistic to the preconceived notions of some present I can assure you they are made with no feeling of animosity, but in all friendliness, and I trust we shall part again with friendships cemented, and with mutual knowledge gained by our interchange of ideas.

A thorough knowledge of the surgical anatomy of any particular region of the body is indispensable if we would aspire to treat the part scientifically, for, when we undertake the task of endeavouring to restore to health any part or organ of the body that, from any cause, is prevented performing its allotted task, we should remember with humility that we then presume to pose as assistants to the Creator who rules the Universe; and it should be our duty, before tampering with the body of any creature to make ourselves thoroughly conversant with the structure and function of the part on which we are about to operate. In this branch of our calling we *should* hold a great advantage over those practising the healing art in the sister profession, but notwithstanding the few obstacles in our way, how few of us avail ourselves as often as me might of the opportunities that are ours, by making appeals to that unerring guide—the Book of Nature. It may be the very fact of there being so little difficulty in the way is the cause of our placing so light a value on this undoubted advantage. This remark has struck me as being particularly applicable to the subject we are about to discuss; for—I say it advisedly—if any of those gentlemen who have given us their experience of their methods of treating ailments of these particular parts had acquainted themselves with the surgical anatomy of these parts, their remarks would have to be modified.

It may be of interest here to give a brief *resume* of the circumstances that led me to give a closer investigation into the subject we have chosen for our consideration to-day. Some of you I believe are aware that it has been one of my "hobbies" for many years to acquaint myself from nature with some of the laws ruling the development and the decay of the teeth of the horse. One day in the winter I was going through a slaughterer's yard and saw a dead pony, instinctively I looked into the mouth and found it was of an age not always easy to find dead, viz., rising four years old. I then ascertained that it was suffering from no infectious disease, and was told that the cause of death was choking, which was evident from the amount of ingesta in the nasal chambers. The head was taken home for the teeth to be cleaned and preserved, and then I bethought me that possibly this choking might throw some new light on our knowledge of the sinuses.

Some of you may remember that when I spoke in London, I remarked on having on one occasion found the gutteral pouches filled with sand, dirt, and the shells of small mollusca. The horse in that case had been staked, had fallen with his head in a ditch, and died from asphyxia. I said then that as that horse in his violent struggles for inspiration had filled these gutteral pouches with foreign bodies through the narrow orifices of the eustachian openings, so it might be possible that under the same conditions the facial sinuses might have foreign matters passing into them. Here was a case that would prove or spoil my argument! One side of the maxillary bone was carefully sawn through to lay open the sinuses (specimen exhibited) and they were found to contain some of the partly masticated food that had been returned into the nasal chambers in the act of choking. This must have been drawn or forced into these sinuses by the violent inspiratory efforts made.

I had, then, in the subject before me a ready made experiment, so to speak, from nature. It at once opened out a train of reasonings that were so interesting and instructive to myself that I felt it incumbent on me to prosecute the enquiry further and then to lay the results before the profession.

As I looked on this I had proof positive that for the future there need not be a trace of a shred of a doubt that in the treatment of diseases of these sinuses by nasal insufflation the medicinal agent readily gains an entrance from the nasal chamber to the sinuses.

I think that here I ought to refer to a quotation by Professor Smith, he says "I hold that it is an absolute impossibility for any agents injected up the nostrils to find their way into the upper and lower sinus." The position taken by the professor is assaulted here by nature, not by me."

But the proof that medicinal agents may reach these sinuses from the nasal chambers is not the only lesson we may deduce from the head before us, for the case clearly points the more than probable cause of many of these cases, otherwise obscure. Had this pony lived it would without doubt have become affected with double ozena, and if the fit of choking had been overcome without the

knowledge of the attendant the cause would have been hidden in obscurity.

In dealing with the causes of nasal gleet, Prof. Smith mentions the extension from an ordinary catarrh; and injuries to the front of the face. To use his own words, "I have had many cases of nasal gleet with extensive bone disease, which I could not attribute to either injury or accident. Therefore there are other causes of which I have no cognisance whatever, but which are dictinctly operating in the production of this condition." The case before us gives us this knowledge, viz., a violent fit of coughing when in the act of eating, but of this I intend to speak more fully after taking a few physiological and anatomical facts, then my arguments as to causes and treatment of diseases of these sinuses will be the more readily understood.

Anatomy. There are certain points which are certainly not clearly expressed in our reference books, and judging from the correspondence one has seen on the subject under consideration, they are not understood generally by gentlemen who have been treating the disease. First, a few words about the anterior maxillary sinus: at first sight it appears to be entirely shut off from all communication with the other sinuses, and our reference books would almost lead you to suppose that this is so, but if you think for a moment you will see what an absurd supposition it must be to imagine that there can be a comparatively large cavity in the animal body *vacuous* — if it did not contain air, and yet shut off from all communication with the external air. I felt this argument to be so absurd that I went to this Book of Nature to solve the mystery and here, by this specimen, I show the exact position and course of the opening, which is always present, and in some conditions, as in this one, is large enough to admit a penholder. This opening proceeds from the larger one from the middle nasal meatus to the sup. maxillary sinus, it passes down from the common opening, directly inside the outer plate by the maxillary bone, and under the ductus ad nasam, passing over and following the roll of the maxillary turbinated bone.

It is asserted by most anatomists that this sinus is not formed until maturity, though M. Goubaux has shown a head, with the sinus at 6 months old. Here, gentlemen, is the head of a 240 days equine fœtus with the sinus distinctly shown; and another here shows it to be of quite a respectable size at birth; so that we may take it that all these sinuses with the openings communicating with the nasal chambers are formed like other parts of the body, during fœtal life. Before leaving this part of the subject I have a most interesting fact to point out to you, viz: that by a careful examination of the condition of these sinuses it would be possible for an expert to tell whether or no a young animal had *breathed*, independently of an inspection of the lung; for these sinuses are not inflated before the first act of respiration. (pecimens were here exhibited.)

I must beg of you now to give me your close attention to a description of the opening from the nasal chambers to the sinuses. The Professor says "It is very small in the fresh specimen, and sometimes you have the greatest difficulty in getting even a probe into it. It is never sufficiently large to be seen unless you push aside the turbinated bones—and I know that 25 minutes hard work is entailed to expose that opening."—If this assertion had been made with reference to the communicating orifice between the nasal chambers and the maxillary sinuses of the ox, I should have agreed with Prof. Smith, that the difficulty of injecting medicinal agents into this sinus per nasam would be almost insurmountable; for in this animal this opening is, contrary to the teachings of our best authorities, *very small indeed*, and the orifice is most difficult to find. In a dried specimen of the head of the ox we certainly do see a very large opening, but in the living animal or fresh subject this is closed by a thick layer of the pituitary membrane, and the only opening from the nose to the maxillary sinus is this very small one situated at the posterior part of the middle meatus. Only a small probe can be passed into it, and as the lower turbinated bone must be pushed on one side to find the opening, and it then takes a course *downwards*, the difficulty of reaching it in the living animal would be great. But in the case of the horse my experience does not all agree with Prof. Smith's; *there is no difficulty in finding it*, and a probe may be easily passed into it. In the horse the size of the opening varies; for that it does dilate and contract this head seems to prove—on one side of the head we find the orifice open, and on the other shut—in the same manner as the opening of the eustachian canal may vary in calibre when open or closed.

The orifice itself is an elliptical opening about an inch in length, running first lengthwise of the middle meatus, the posterior edges of the opening being about half-an-inch from the posterior extremity of the meatus. In some cases we find the entrance of the opening protected by a protuberance of the pituitary membrane in front of it. The opening in its passage backwards from the nasal chamber takes a half-turn from the longitudinal to the transverse plane of the head, passing over the posterior part of the maxillary turbinated bone, and it enters the sinus between this and the bony septum that divides the frontal from the maxillary sinus, formed by the edge of the ethmoidal turbinated bone. The exact position of this opening could be marked in the living head by taking an imaginary line from the anterior margin of the orbit in a direction towards the centre of the head, and another from half-an inch above the superior margin in a forward direction, and the point where these decussate, would be just over the outer edge of the opening. If we decide at any time to trephine over this opening, we should take a line bisecting the angle thus formed, far enough to take a centre for our trephine when a point on its circumference would touch the point of the angle. From this large common opening we find one, already described, leading into the anterior maxillary sinus.

A word or two now about the conformation of the sinuses. Each of these cavities is only as it were a prolongation of the cavity of the turbinated bones; the upper frontal or maxillary sinus is a prolongation of the hollow of the superior part of the ethmoidal turbinated bone, and the lower one is a bulging out of the cavity of the maxillary turbinator. It is of great importance to bear this in mind when we talk about making depending orifices to drain pus collected in these cavities; for the part of the sinus situated in the turbinated bone proper, is lower than the opening we have been accustomed to make through the outer walls of the cavities, and therefore our openings could not drain them satisfactorily. We profess ignorance as to the use or function of these large cavities, the only reason we have hitherto adduced as accounting for their capacity being, that a larger surface is created for the attachment of the large masseter muscles without adding unduly to the weight of the head. This is evidently one reason; but in accomplishing this end another most important function is performed, viz: the supplying a large surface of mucous membrane for the rarefaction and moistening a body of air on one side of a thin membrane, whilst the atmospheric air strikes the other; and this appears to be as necessary for the sense of olfaction as the same arrangement is for audition.

We are only likely to arrive at the truth on any such question as this by closely studying comparative anatomy, not only as comparing the structures of the domestic animals with those of man; but by comparing animal with animal right up the scale, and noting in each the degree of development of any organ or part, and then noting how in each such animal the function of such

organ or part is performed. Such a course can but lead us to this conclusion that these large cavities in the head of the horse are but prolongations or continuations of the hollow cavities of the turbinated bones, the upper one of these appears to be a large ethmoidal cell, being supplied with large filaments from the olfactory nerve; and that they are not only useful for rarefying and keeping moist the air that is respired through the nasal openings; but are as necessary to the sense of smell as are the external cartilages and appendages of the auditory apparatus for the sense of hearing. In the one case a thin membrane is struck on one side by atmospheric vibrations, known as sound, which vibrations are gathered and conducted to membrana tympani by the external auditory appendages. On the other side of this membrane is the rarefied air from the mastoid cells, and in the horse the large gutteral pouches are always, in health, filled with rarefied air. Carrying this line of reasoning to the sense of olfaction we find an arrangement of cells and convolutions, by which there is always a volume of rarefied air on one side a membrane on which are distributed the nerve fibres which have the power of conveying the presence of certain particles in the air, to the brain. And on the other side of this membrane the atmosphere strikes after commingling with a rarefied and moistened air, rendered so by having been in contact with a large surface of mucous membrane as supplied by the maxillary turbinated bone. If these cells become filled, or thickened, or blocked, or occluded, the sense of smell is lost, even if the nasal passages are free, as is the sense of hearing under like circumstances.

In those animals where the sense of olfaction is the most highly developed, a large surface of the membrane is provided by an extraordinary increase in the number of the convolutions of the turbinated bones, and the capacity of the ethmoidal cells; and in proportion as we find the increased surface given to the olfactory and nasal membranes by the extent of the convolutions of the turbinated bones do we also see the cavities of the facial sinuses less, and *vice versa*. For instance, the Otter (one of the mustelidœ) has practically no sinuses, most of the carnivora where the convolutions of the turbinated bones are great, have practically no maxillary sinus, and but a small frontal one. This is particularly noticeable in the family of the mustelidœ already mentioned, and in the felidœ, cunidœ, and vulpidœ. The rodents have no maxillary sinus, but the outer face of the maxillary bone is replaced by a thick membrane; this is also noticeable in the cervidœ. In the horse the turbinated bones are not so highly developed as in some of the animals named, but the large surface of membrane is supplied by the turbinated bones rolling out and forming these large cavities.

The nasal chambers, too, are worthy of our consideration. We all of us know that each nasal chamber has in it three channels for the passage of air, these being formed by the two turbinated bones and their appendages, but a little closer inspection seems to indicate that each meatus conveys air for a distinct and separate purpose. The upper one, which is formed by an overlapping of the superior edges of the cartilaginous septum of the nose, conveying the air directly to the olfactory fossa and supplies an air current on one side of the ethmoidal cells. This might be termed the olfactory channel or meatus. The lower one, which is the largest, is directed towards the larynx, and the air probably traverses this meatus during normal quiet respiration. The middle one seems destined to convey a current of air direct to these facial sinuses. This is of material importance to keep in remembrance when treating cases of ozœna by nasal insufflation.

I have already mentioned that the upper part of each of the turbinated bones is hollowed out, and the bony plate of each forms the inner wall of a sinus; the lower turbinated bone forming the wall of the ant. maxillary sinus, and the upper one the wall of the superior maxillary sinus. About mid-way down the nasal chambers the upper cavity of each turbinated bone is terminated by a bony plate, and these plates separate the sinuses from the nasal chambers and from the appendages of the turbinated bones. The appendages have a basement structure of bony and cartilaginous material, rolled upon itself; the upper one from behind forward and from below upward; the lower one in a contrary direction; but note that the interiors of these appendices are open, and form a part of the nasal chambers proper. In the fresh specimen the cartilaginous edge of the roll of each appendix is not fixed, but evidently motile; the canal formed by the roll of each appendix leads to the common opening into the sinuses. The function of the appendages is first to guide the air current to a focus at this opening where it passes into the cavities, and the large hollows of the turbinated bones to which we have given the name of sinuses. They would also protect the channels leading to the sinuses, and the olfactory cells from the invasion of foreign bodies.

Dealing more particularly with the sinuses may I point out that the cartilage forming the basement of this superior cornu of the maxillary turbinated bone, forms a loose attachment to another cartilage proceeding backwards from the ala of the nostril; and at the anterior and lower part of the middle meatus, at the commencement of the channel for the passage of air to the sinuses is a boat-shaped fossa or depression of some capacity. The mucous membrane at this part is extremely sensitive, a touch induces sneezing, whereas a probe or tube may be passed high up the lower meatus with comparative ease. Each appendix is covered by, and its structure is chiefly composed of *erectile tissue*. This begins at the bony septum of the turbinated bones, and becomes more marked towards the nasal openings. In a paper such as this a practitioner, which is all I profess to be, has not the time to enter into minute histology, however much his inclination might lead him to do so; but there is a good field of work open here for some of our specialists. The membrane has in it numbers of large trabiculæ, the coats of which are pink in the fresh subject (specimen exhibited). They are composed principally of yellow elastic tissue, but muscular fibres are found interspersed amongst the elastic fibres. The muscular fibres, and the anterior parts of the appendices, become confounded with the muscular structures regulating the opening and closing of the anterior nares. One of these, the small super-maxillo nasalis, a broad muscular band passing over the ridge of the anti-maxillary bone, becomes attached to the upper cartilaginous prolongative of appendix of the maxillary turbinated bone, and by its contraction this cartilage would be directed into the cavity of the false nostril and thus the boat-shaped depression and the channel leading to the sinuses would be closed. The erection or contraction of this erectile tissue, assisted probably by the muscle I have named, would, especially by its action on these free, mobile extremities of the cartilaginous basement structure of the appendices of the turbinated bones, regulate the capacity of the nasal chambers for the ingress and egress of large or small volumes of air; *and this would also tend to open or close the common opening to the sinuses.* When the horse has his head down grazing, or feeding naturally, these trabeculœ would probably be distended, the nasal passages would be of small calibre, and the openings to the sinuses being also closed, foreign bodies would be prevented gaining an excess to them. Digressing for a moment, I may here point an argument against hayracks above the horse's head for, with the head up, feeding in this unnatural position, the turbinated erectile tissue would be empty, and the nasal passages and the openings to the sinuses large, thus favouring hayseeds or other

foreign bodies finding a lodgment there, and being a possible cause of some obscure attacks of ozœna. When the horse's head is extended in the gallop, this middle meatus would be closed by this superior cornu of the maxillary turbinated bone being drawn into the cavity of the false nostril—which is probably the use of this space—but the respiratory opening would by the same movement be enlarged.

Causes of Ozœna. Besides the extension of nasal catarrh and injuries to the face, you will be prepared to hear that I believe the most probable cause of obscure cases is the presence of foreign bodies in the sinuses. What more likely than in the act of coughing from any slight irritant in the air passages when feeding, a little of the food may find its way through these orifices into the sinuses, and there becoming lodged set up such an amount of irritation asto induce suppuration and thickening of the membrane. In such a head as this (referring to specimen) where two fingers might be passed through the common opening, such a thing might easily occur. It may be argued that we do not often find such a large opening; the answer is, that neither do we find the disease of ozœna of very common occurrence. I should say that this would have been the cause of the pus-bags mentioned in Prof. Smith's paper as being found in the sinuses of the head of a mule. A particle of food would probably have been found in each bag.

Teeth. I do not believe that teeth are to blame in anything like the number of cases for which they have been held responsible. There may be an immense amount of inflammation and caries of the tooth and the alveolar cavity without the extension of the inflammation process to the lining membrane of these sinuses. There may be often quite an enlargement in the aleveolar cavity, with fœtid breath and a fœtid smell in the mouth, and yet not true nasal gleet. The commonest of the causes of caries of the teeth of the horse is a little ingesta becoming insinuated between two teeth; the gums become inflamed, the teeth separate slightly, a little more food becomes insinuated, and becoming impacted is passed down the alveolus in the act of mastication. (specimen exhibited).

What can we say then to the advice given to extract a molar tooth to establish a drainage from these sinuses to the mouth? At the London meeting in Oct. last, I am afraid, from the reports of my remarks, that I did not express at all clearly what I intended to convey, viz., the absurdity of talking about extracting a horse's molar tooth with this object. In the human subject the case is very different. Just look where these alveolor cavities are situated. At all ages they form a septum between the teeth and the sinus. In a young head they go high up into the sinus; after eight years of age, when the pulp cavities of the molars are closed, they become shallower year by year, by a very gradual development of these bony plates crossing the sinus; the alveolar sac, with its contained tooth being thus very slowly forced out of the cavity of the sinus, and the face of the tooth by this means always renewed with a fresh grinding surface; the teeth themselves becoming less year after year.

Both the shape and capacity of the sinuses are by the same process very materially altered with the age of the horse. They also change with the development of the molar teeth. If a transverse section of the head is made immediately in front of the orbit it is interesting to note where it would bisect the molar arcade—at different ages.

In this 240 days fœtus it would cut through the third molar.

At birth it would barely touch the third.

At one year old it would be behind the fourth.

At two years old behind the fifth.

At three years old through the middle of the sixth.

At four years old the posterior part of the sixth would be cut.

In an old horse the section would be well behind the sixth.

In a young horse, as for instance this four years old, the alveolar processes of the last three molars are seen to be projecting into the superior maxillary sinus.

At about 12 years old, the fourth and part of the fifth are in the anterior sinus.

In an old horse the alveolar processes of the last three molars are all generally seen in the anterior sinus.

But during the whole of the life of the horse, and notwithstanding all these changes of shape and capacity, which you will observe are all brought about by changes in the relative shape and size of the superior maxillary bone *only*. The *relative* position of this opening from the nasal chambers to the sinuses *never changes*, it is always at the spot I have before indicated.

Returning to the question of extraction; after the molar has been removed, which, except in an old horse, is never a light operation; there still remains this bony septum which must be pierced in some way, and then the very thing would happen that is held to be a common cause of disease of these alveolar cavities. And not only would ingesta be impacted in the alveolus, but there being now a clear passage established, it would pass directly into the sinus! and the last state of that horse would be worse than the first! We should have foreign bodies without stint, going directly to the delicate membrane it is our object to relieve.

Treatment. In my time I have treated cases surgically, by trephining, and medically, by nasal insufflation with success. Not that I have had many cases to cope with, I should say that these cases were not so common amongst civilians' horses, as in our military establishments.

The first endeavour should be to ascertain the probable cause of the malady, for our line of treatment must be guided by the knowledge so gained. If from the history of the case we have reason to believe that it has been induced by the lodgment of a foreign body, as in this head, which would doubless have developed nasal gleet had the horse lived, then the treatment by the injection of medicaments per nasam would be wrong. We should trephine and by a thorough cleansing rid the cavities of the foreign matters contained in them. But where are we to trephine? What on earth is the use of an opening at the extreme upper part of the frontal sinus? Or at the spot marking the division between the posterior and anterior maxillary sinuses? The part of the cavity over this plate, which is the wall of the opening into the nasal chamber, is untouched, and not even with an iron scraper such as Prof. Smith advises could we possibly scrape a diseased membrane from all these nooks and crevices. I would have the low opening as suggested by Prof. Smith near the anterior edge of the maxillary ridge; but my upper one I would have here, just over the orbit, and between that and the median line of the head. It should then be directly over the common opening from the nasal chambers to the sinuses, and if, as we know from experience, there is any difficulty in establishing a drainage from the sinuses into the nasal chambers—the canal being closed from any causes—what more simple than first to try a syringe with a curved nozzle, which should be introduced under this plate into the natural orifice, to effect a passage by forcing a stream of water into the proper channel. If this method were not successful, then with a curved pair of scissors this thin plate could be removed, and an opening as large as you like easily made directly into the nasal chambers. This should commend itself as a more scientific and rational method of treatment than plugging this lower opening and injecting water into the sinus by a force pump, until something gives, no matter what! Probably one of these plates of the turbinated bone.

Suppuration into these cavities may follow a catarrh,

the inflammatory action extending through these orifices to the membrane of the sinuses. In an ordinary attack the membrane of the sinuses takes on a healthy action simultaneously with the pituitary membrane, and I think, in looking at the anatomical structure of the part, we can understand the method and reason of that old fashioned remedy for nasal discharges, of steaming the head with pine saw-dust, being so efficacious. we have in this agent, the active principle of the eucalyptus, and its astringent and sedative action on these mucous membranes is carried by the steam inhaled to every corner of these sinuses.

But sometimes, through neglect, the orifice becomes partially closed, through thickening of the membrane, or with inflammatory products still in the sinus. In these cases medicaments may be injected per nasam so as to be brought directly in contact with this communicating opening. There is only one right way of doing this, and I believe that a further knowledge of the structure of the nasal chambers would lead gentlemen who advocate this treatment to slightly modify their methods. For instance, it does not appear to me to be correct to talk of "passing the tube of the insufflator as high as possible, or until some of the injection finds an escape either through the opposite chamber or the mouth." If the tube were so passed the opening into the sinuses would be missed. It will be observed, too, by reference to the specimens on the table, or much better, by examining a fresh subject, that in order for the medicinal agent to reach these sinuses, the tube of the insufflator should not be passed along the floor of the nasal chamber as some advise. By following either of these methods the bulk of the injection would pass backwards into the fauces, or possibly some of it would go through the eustachian openings into the gutteral pouches; but the sinuses, the parts it is our object to reach, instead of having the full benefit of the injection would be scarcely touched. It should be noticed that any instrument or agent passed into the nasal chamber, is directed by the peculiar conformation of these cartilages at the auterior nares, into the lower meatus and away from these upper ones.

Therefore, if we would ensure the therapeutic agent coming in contact with the membrane of the sinuses; the nozxle of the insufflator, which might be improved by having a soft pad of sponge or indiarubber on its extremity, should be guided carefully over this upper horn of the appendix of the maxillary turbinated bone; it is then in the boat shaped fossa I have spoken of, at the lower part of the middle meatus and it may then be passed along the channel to the orifice leading to the sinuses and then the substance, whatever is used, may be injected

In man the maxillary sinus is comparatively large, and surgeons can reach it, and treat disease in it by passing a soft curved bougie up the middle meatus and into this communicating orifice. Why may not this be done with the horse? The difficulties are surely not insurmountable, but it would require practice and a thorough knowledge of the anatomy of the parts and their functions. In man, too, a tooth may be extracted to provide a drainage, but this would not be permissible in the case of the horse.

Therapeutic Agents. I have purposely refrained from saying much regarding the agents to be employed in the treatment of diseases of the sinuses. I am no believer in *specifics* and old recipes—and most practitioners have their favourite remedies. I am partial to the employment of a weak solution of the Chlorde of Zinc. or of Carbolic or Boric Acid, for injecting and cleansing the sinuses when they have been trephined. And I have had reason to be more than satisfied with the result of the use of Iodoform and Borax for nasal insufflation. Probably we should not find these suitable for all subjects—but whatever agents we decide on using, I would advise that the methods I have advocated for their employment have a trial.

Gentlemen, I beg to thank you for your very kind indulgence. It has been my endeavour to demonstrate that both surgical and medical methods of treatment for nasal gleet are correct under their respective circumstances, and each may be wrong if the cause has not been hit off correctly. What I would say in conclusion is, that in making our diagnosis we pay special heed to the likely cause, and also bear in mind the anatomical and physiological facts I have endeavoured, though I know imperfectly, to lay before you—when we have determined on the line of treatment to adopt. Let us approach each case with an unbiassed mind, and though we may each have been successful in one or other method of treatment, we shall be certain to find out, sooner or later, that a hard and fast rule cannot be laid down.

Discussion.

Prof. Smith, in opening the discussion, said they were very deeply indebted to Mr. Goodall for his excessively able address, and also for the specimens which accompanied it. (Hear, hear.) It appeared to him that the main point of the address was directed against their defective anatomy and physiology; and he had to acknowledge, though he had paid a certain amount of attention to those sciences, that Mr. Goodall had mentioned many points which he certainly had not observed before. He alluded more particularly to the erectile tissue in part of the nasal chamber. Now his attention had been drawn to it he could change his memory with the fact that that material did exist there; and other points in the paper were clearly additions to their anatomical and physiological knowledge. Perhaps they all had an indistinct idea that three distinct passages existed in the nostril, but he never heard the thing so clearly defined before. It was impossible to criticise that excessively able paper without having seen it in print. Mr. Goodall would pardon him for not having the same complete knowledge of the causes of the affection as himself, inasmuch as he, (Prof. Smith) although he had had some opportunity of making post-mortems in cases of suffocation had never seen food drawn into the sinuses through the nasal chambers. He thought Mr. Goodall had been rather hard on some of the anatomical teachers, because if he heard him correctly he said they were instructed that the inferior sinus did not communicate with the nostril. (Mr. Goodall: It is not pointed out clearly in our reference books.)—They were instructed that the sinus did communicate with the nostril, and he was under the impression that it was so laid down in the text books. However, a remark of his (Prof. Smith's) which was most distinctly defective, Mr. Goodall had emphasised, viz., the length of time it took to expose the opening in the nasal chamber. Obviously it was not 25 minutes to find it after the head was laid open; but obviously it took some time to remove the skin, split the head, &c., and then find it. It was new to him that the openings into the sinuses dilated and contracted in the same way as the eustachian tube, and he should much like some proof from Mr. Goodall. They differed as to the desirability of trephining the head over the orbit. Whatever they injected there must he supposed, pass directly into the nostril. He was under the impression that throwing material into the sinus was to disinfect and wash out the sinus itself. The use of the false nostril, and the drawing of that piece of cartilage into it, was also quite new to him: and that was an illustration of the exceeding amount of industry Mr Goodall had shown and the large amount of information they had gathered. (Hear, hear.) In the pus bags in the mule's head no food did exist. He differed also as to the teeth being rarely to blame as the cause of nasal gleet. As he had recently brought the subject be-

fore the notice of a kindred society he need not dwell on his belief that the teeth were very generally the cause of nasal gleet, and that the extraction of those teeth then seemed a reasonable measure. He did not say the extraction of sound teeth would be a thing one would do commonly. He should probably extract the fourth, or even the fifth, but he certainly should not try the sixth. He quite understood the grave disadvantage of opening the cavity of the mouth into the anterior sinus.

Mr. GOODALL :—Your fifth would be into the anterior sinus after 12 or 14 years of age.

Prof. SMITH continued that that again showed how careless they had been in making their observations. Lastly, he would emphasise the point that although their anatomy and physiology had been so gravely defective, although those favourable to nasal insufflation had been in favour of it in the wrong way, and those who practised surgery had been making incisions in the wrong place, and pulling out teeth which it seemed they ought not to have pulled out, yet still they had succeeded in curing a large number of their cases; so that although their knowledge had been so defective still to a certain extent they had been on the right track, and a certain amount of credit was due to them as general practitioners for being able to tackle those cases in a fairly satisfactory manner. (Hear, hear.) He apologised if his observations had been more personal than they should have been in opening that discussion.

Mr. HUNTING said somebody had remarked that genius was the infinite capacity for taking pains ; and if so they could congratulate Mr. Goodall on possessing genius ; for they seldom had a paper which showed more hard study and minute work. But a man might have genius, and might do a great deal of minute work, and yet arrive at a wrong conclusion. He did not know that Mr. Goodall had arrived at a wrong conclusion, but he thought he had on some part of that subject. He began by trying to show how it was that cases of collections of pus in the sinuses might occur. To find sand in the sinuses after drowning was nothing new. There were cases of men falling into flour and dying of suffocation, in which every part of the mucous membrane was found plastered with flour. But there they had expiration and inspiration both forcibly performed. If they wanted to distend the eustachian tube it was done by violent expiration as well as inspiration ; and it was only by a violent struggle, as in the last struggle for life, that they would get such an amount of violent expiration and inspiration as would fill up the sinuses. They found those cases of impacted sinuses in animals which had had no such violent struggle. There was through the nose a direct passage into the chest, but there was no thoroughfare through those sinuses. If, as Mr. Goodall would tell them, merely extra exertion in the way of inspiration would draw sand and other foreign matter into the sinuses, impacted sinuses and pusing would be very common, whereas it was exceedingly uncommon. They found animals with matter in the sinuses from no cause they could trace. If it arose from extraordinary exertion in breathing they would expect in ordinary practice to have 30 or 40 cases of impacted sinuses in a year; but as a matter of fact they had perhaps one. There was some cause, then, which he thought Mr. Goodall's explanation did not clear up. As to the insufflator, if a little swelling was sufficient to cause the sinus to retain the pus, he held that the same closure was quite sufficient to prevent the passage of stuff from the insufflator into the sinus. If they had the passage blocked by a thick mucus membrane how would the pressure of an india-rubber ball send a powder into the maxillary sinus ? As to the size of the sinuses in the horse, Mr. Goodall pointed out on the old theory of design how those were made and what they were made for. He thought all scientific men had given up such notions long ago. The existence of a cavity in the head was simply the adaptation of the skull or face to the requirements of the animal. That the turbinated bones had anything to do with the sense of smell he did not believe a bit, or the power of smell would extend all along them. He liked the design of an Almighty Power, under which the Almighty Power made the horse for certain purposes which did not exist at the time he was originally made! Prof. Smith said if they had success in their practice, all well and good. Not at all. They required an exceedingly large number of cases before they could draw such an inference. If he sprinkled salt on a horse's tail every day for a week and he got better of a corn it did not prove that the salt cured the corn. Unless they had hundreds and even thousands of cases of the same kind and under the same circumstances they had no right to draw such inferences. He would say this in favour of Prof. Smith, that he did not think it was necessary for him to have descended to such an argument. Prof. Smith had a very clear idea about the case. They had a cavity with matter in it. It was such a simple thing to make a hole in the side of that cavity to empty the matter out in a day or two that he did not understand how anyone could compare the surgical with the medical treatment.

Mr. FAULKNER expressed the very great pleasure it gave him to enjoy the hospitality of the worthy Mayor, and to listen to a most original and clear anatomical and physiological demonstration. Mr. Goodall had shown that he possessed immense self-denial, power of exertion, and love of the profession. (Applause.) Having as a practitioner seen a fair number of cases of ozœna he did not quite agree with Mr. Goodall that they had been in such a state of happy ignorance. He took it they knew that the sinuses of the head had a function beyond affording surface attachments for muscles, and also that there was a passage between the sinuses. As the result of his experience he must say he agreed with some of the remarks that had fallen from Prof. Smith, having seen cases in which he had not the slightest doubt that the teeth were actually the cause of the mischief. He had also seen cases in which he was perfectly satisfied that the teeth were not the cause ; but he had never yet seen a case which led him to believe that impaction of the sinuses with ingesta was the cause. He had frequently in post-mortems of animals that had died in violent death struggles found sawdust and peat moss right into the lungs, and in the sinuses, but he had never found ingesta to be the cause of nasal gleet. They ought clearly to understand what they meant by nasal gleet. There might be a gleety discharge without impaction of the sinuses. He had never yet succeeded in treating it by means of the insufflator although he was sure he had passed it into the middle meatus. Mr. Goodall made the rather cynical remark that the disease was not so common amongst the horses of civilians as in the army, but town practitioners in Manchester got five or six cases of ozœna in the year on an average.

The SECRETARY said it was not often they had the privilege of listening to so valuable a paper. He proposed the adjournment of the discussion to the next meeting, when he would have great pleasure in opening the debate.

Mr. SLOCOCK seconded the resolution, and it was unanimously agreed to.

On the motion of Mr. Barford, seconded by Sir H. Simpson, it was unanimously resolved to have the paper printed.

Mr. J. F. SIMPSON proposed, Mr. Wilson seconded, and it was unanimously resolved, that the next (November) meeting be held in London.

The proceedings closed with votes of thanks to the president and Mr. Goodall.

ARMY VETERINARY DEPARTMENT.

Veterinary Titles.

"An Old Correspondent" writes:—"I am so sorry if my remarks addressed to you a fortnight ago have created any wrong impression. I did not intend them to do so. Appreciating the excellent work done by Col. Drummond Lambert and his Staff, as I do, I should be the last to wish to cast any slur on a body of officers so zealous. I wished to remove a wrong impression, not to create one; and if anything I wrote has occasioned pain, I can only say how much I regret it." The designations of the Principal Veterinary Surgeon in India, and Inspecting Veterinary Surgeons, have been changed to Principal Veterinary Officers, and Inspecting Veterinary Officers, respectively.

Vety.-Major W. Walker has been granted leave from India to England for six months, on medical certificate.—*Army and Navy Gazette.*

Obituary.

T. J. Symonds.

It is with regret that we have to announce the death of Veterinary-Captain T. J. Symonds, of the Army Veterinary Department and attached to H. E. the Governor's Body Guard. He had been suffering for three or four days from diarrhœa, and finally succumbed to heart disease on Sunday morning at four o'clock. Mrs. Symonds, sad to relate, was away at Ercaud, all unconscious of her husband's danger; she was telegraphed for on Saturday afternoon, and arrived this morning about an hour after the funeral had taken place. Dr. Symonds has left one child. He was much respected and had seen some service; he was present on the march from Quetta to the Relief of Kandahar in the Afghan war of 1880-81, and received the medal.—*Madras Times.*

EXTRACTS AND NOTES.

WORMS IN SHEEP.

Experiments at Indooroopilly.

The Chief Inspector of Stock applied in October last for permission to employ Mr. James Irving, M.R.C.V.S., to test a number of specifics on worm infested sheep. The application was approved of by the Colonial Secretary, and Mr. Gordon obtained two lots of 15 each, the animals being weaners from Darling Downs that were known to be badly affected with worms. In a letter covering Mr. Irving's report, the Chief Inspector of Stock states that none of the agents employed proved an effectual remedy, but that Mr. Irving, from close observation, was warranted in reporting that a solution of arsenic gave the best results, the minute doses in which it was administered not appearing to be detrimental to the sheep. Mr. Gordon was present during the first drenching, and also during a portion of the time—three days—that the post-mortem examinations were made, and he states that the examination was most thorough, not an internal organ or any portion of the viscera escaping close scrutiny.

Mr. Irving's report is dated May 7, and in it he says:—

Sir.—I have the honour to report to you for the information of the Colonial Secretary, that on March 30 I made a post-mortem examination of a sheep, one of 15 sheep sent from the Darling Downs to the Indooroopilly quarantine grounds, for experimental purposes. This sheep had a considerable number of thread worms—Strongylus contortus—in the fourth stomach—abomasum, and was also affected by a nodular disease of the intestines, which I will hereafter describe. On April 1 I administered six different remedies to 12 sheep, namely, Nos. 1 and 2, solution of arsenic; 3 and 4, turpentine mixture; 5 and 6, Hayward's mixture; 7 and 8, cocoanut oil; 9 and 10, powder, supplied by Dr. Thomas L. Bancroft; 11 and 12, salt and lime. The remaining two sheep, 13 and 14, were kept as control animals, and did not receive any medicine. No. 3 sheep died shortly after receiving the drench, from the effects of the turpentine, a little of which had got into the windpipe. A post-mortem examination of this sheep was made directly after, when it was found that the fourth stomach was free from worms and only a few thread worms were found in the small intestine. On April 10 the sheep numbered 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12 received similar doses of medicine to those administered on April 1. On April 21 and 22 post-mortem examinations were made of the 13 sheep. On April 26 a fresh batch of 15 sheep were drenched, Nos. 1, 2, 3, with liquor arsenicalis; 4, 5, 6, satonine and gentian root; 7, 8, 9, lime and salt; 10, 11, 12, Hayward's mixture; 13, 14, 15 were kept as control animals, and did not receive any medicine. No 5 sheep died on April 27; this sheep was a very sickly looking animal when alive, the lips and nose being swollen, and wool dropping off its body. Post-mortem examination revealed thread and tape worms, and extensive nodular disease of the intestines. The remaining 14 sheep were destroyed on May 3, and post-mortem examinations made. So far as these experiments have gone the preparation of arsenic has given the best results; it is the cleanest and most easily administered, as there is only one fluid ounce in a dose, and the sheep drink it readily; the other remedies being more or less nauseous the animals have a decided objection to swallowing them, and this is a matter of consideration where hundreds of sheep have to be drenched. Sheep Nos. 1, 2, and 3 of the second batch only received one dose of medicine, and on post-mortem examination showed more worms than did sheep Nos. 1 and 2 of first batch, which received two doses of medicine. I do not consider that one dose will be of much avail, and would recommend that three doses should be given at intervals of nine days between each dose. The sheep to be kept without food for at least 12 hours before a dose and two hours after; they may be allowed water half an hour after receiving the medicine. You will notice

that nearly all of these sheep were more or less affected with a nodular disease of the intestines. I am told that this disease has been noticed by sheep breeders at various times during the last 12 years in the Darling Downs district. Mr. Charles J. Vyner, M.R.C.V.S., reports having investigated this disease in the Armidale district, and says that it also affects sheep pastured throughout the eastern part of New South Wales. It has been known for some years in the southern and eastern States of the United States of America, and previous to the winter of 1888-89 it was known as a disease which is characterised by tumours present in the upper part of the large intestine. The disease causes heavy losses, for it seriously affects the health of sheep, and renders the intestines valueless for sausage casings. Dr. D. E. Salmon, chief of the Bureau of Animal Industry, Washington, says he believes this malady is the chief obstacle to successful sheep husbandry in some portions of the southern States. Since 1889 this disease is known as the nodular disease of the intestines of sheep, and caused by a nematode or round worm (Æsophagostoma columbianum curtice), which though remarkably similar to some other worms of its group, is nevertheless of a distinct species. The adult worm is found in the large intestine of sheep in considerable numbers, and the embryo in the tumours or nodules in the walls of the intestine. These tumours are most abundant about the cœcum or long, although in some cases they are distributed throughout both the small and large intestines. The small tumours, which are scarcely the size of a pinhead, are found in the submucous tissue. They appear like a sac filled with fluid and having a little globe floating within. By using magnifying power the little globe is seen to be a cyst with a worm enclosed. By careful dissection the cyst may be separated, and finally the worm itself may be separated. When the little tumours becomes larger than a pinhead, and entirely filled with the cheesy matter, their structure does not materially change, but is more difficult to make out. It is at this stage that the worm escapes from the cyst and begins to wander within the capsule which its presence in the tissue has caused. On dissecting the large fresh tumours the worm is found in the mass of cheesy material, which is now quite abundant, filling the cavity and producing tumours as large as the end of one's finger. This cheesy material is usual hard, dry, and brown at one end, and soft, yellowish green at the other. It is in this end that the worm is to be found. If some of the harder tumours are examined, it may be found that there is no greenish material in them and no worms. These hard tumours may be of all sizes and are found at all times. From these the worm has either escaped or in the case of the smaller tumours the worms have died. The form of these tumours is usually spherical, but the cheesy material may appear as a long mass, or it may apparently fill what seems to have been a worm track. The last appearance occurs most often in the small intestines. From the mucous side these tumours present little if any colour. The older ones may present greenish-yellow appearance, especially if the mucous membrane over them be thin. In well advanced cases, when the tumours are numerous and large, many are found in which the mucous membrane over them is ruptured, and the chessy mass protrudes into the intestinal cavity. In these no worms have been found, and hence the conclusion has been reached that the worms have escaped. The cheesy material which the worms produce has been found in the lymphatics, on the omentum, and in the liver, but in these places it never seems to be sufficiently abundant to show that the parasite lived long. The diagnosis of this parasitic disease can only be made from a postmortem examination. In living sheep there may be signs of general debility—bloodless lips and eyes, thin sides and flanks, dry wool &c. It may be that nothing else will be noticed, but the flock is not in quite good condition; or in severe cases the diarrhœa or emaciation may be excessive. As the adult worms are comparatively few as compared with the tumours, it is probable that the adults of this species cause but little trouble, but the embryos, on the contrary, cause a great deal. The disease is an insidious one, for not only is the rate of infection gradual, increasing slowly in amount from week to week, but the rate of developement of the tumuors is very slow, apparently requiring months, it is only when the disease is well advanced that its cumulative effects can be noticed. The disturbance of digestion caused by this parasite is mainly due to the derangement of the functions in the cœcum. This derangement is not serious until the resulting tumours become exceedingly numerous, well advanced in growth, and press upon the more essential mucous membrane, disturbing its functions. For the tumours caused by Æsophagostoma columbianum there is no remedy except the removal and extermination of the adult worms. These adults are usually buried deeply in the mucous secretions and attached to the membrane of the large intestine. They may be found in considerable numbers in older sheep. The medicinal remedy must therefore be one which will remove them from these places. It is probable that some one of the surer remedies used for other intestinal parasites will do for these. The killing of the adults will, of course, lessen the number of eggs with which the sheep become infected. As the eggs of this parasite pass to the ground the sheep may get them while pasturing or drinking. The same care in changing pastures, in providing good drinking water and a plentiful supply of salt, should be observed as for other parasites. If pastures are known to be permanently infected then they should be turned over to other stock for a year or two before being again grazed on by sheep.—I have &c,,

JAMES IRVING, M.R.C.V.S.

Mr. Irving appends to his report a very elaborate table, which gives the results of the post-mortem examinations made of each sheep and the remedies administered, with dates and amount of doses.

The Telegraph (Brisbane).

Sale of Methylated Spirit.

At a meeting of the Pharmaceutical Society held in Edinburgh, Mr. Kermath stated, with regard to

the methylated spirit question. that the new spirit was giving him more trouble than ever, because if the bottle were the least damp the spirit was rendered milky. He had learned, too, that furniture polishers could obtain small supplies of the old methylated spirit. Mr. Johnston said that Mr. Kermath could obtain a small supply too, provided it was to be used for manufacturing purposes and was not for sale. Another member said that the new spirit was being drunk just as freely as the old. The Chairman said that the whole question was now under the consideration of the Excise authorities, and it was probable that there would shortly be some alteration in the law.

A Methylated Prosecution.

Another Inland Revenue prosecution is reported from Sligo. Mr. P. N. White was the defendant. For the prosecution, Mr. George Taylor Stoker said he was one of the analysts of Somerset House, London. He and a colleague, Mr. Woodburn, had been on a tour of inspection, and at the shop of Mr. Whyte they found two bottles — one labelled "Tincture of opium, methylated," and the other "Tincture of arnica." The arnica was not labelled "methylated." Mr. Whyte stated that he did not know anything about them, and after going and making inquiry in the front shop, he stated that an assistant had prepared them without his knowledge. In defence, Mr. White said an assistant had prepared these articles in error. He had told him to do away with them, but that had not been done. The defendant was fined in the mitigated penalty of £25, with the recommendation that the penalty should be further reduced to £1.

Horse-Shoeing Competition.

The prizes awarded at the "Royal" Show at Warwick were as follows:—

Roadsters: 1, D. Blow; 2, J. Hands; 3, T. Alcock; 4, J. Pugsley; 5, T. Poole; hc, J. Partridge, D. Price, J. R. Webster; c, W. W. Roberts, W. Watts.

Agricultural Horses: 1, H. A. V. Hopton, jnr.; 2, T. Powis; 3, G. W. Waldren; 4, W. Sparrow; 5, T. H. Williams; c, C. Field and J. P. Webster.

CORRESPONDENCE.

A HIGH JUMP.

Sir,

Disclaiming all idea of inserting an advertisement into your columns, may I claim a small space to speak briefly upon a subject of some little interest in the jumping world.

At nearly all agricultural shows now, whether held in London or the provinces, there are jumping prizes, and these afford a large amount of pleasure to the visitors, though not always to the riders, and are the means of greatly adding to the popularity of the shows and of substantially increasing the receipts, as it is, I believe, calculated by those in authority that large numbers are attracted to witness the jumping. I much doubt, however, if these happy results would be attained if the height to be jumped was fixed at six feet or over. I had the pleasure to read in your well-edited *Record* this week of some jumping that had been witnessed by several gentlemen chiefly in Ireland, the "Home of Jumping." May I be allowed to record what I saw done in this way in England? A gentleman named Mr. John Noble, lately deceased, and until his death the head of a large firm in the Cornwall Road, E., owned an Irish horse called Pygmalion, commonly "Piggy." Some years ago he offered to make a wager that he would ride "Piggy" over six feet of timber. A friend accepted the wager. The feat was to be performed in my father's school, in itself a great drawback to a horse for such a feat as this. The order to make the hurdle, not a wattle, but the ordinary one, was given to an old fellow in the Uxbridge Road, near the Green. The day arrived and so did the hurdle, but when it was measured it was found that the man had by some misunderstanding made the hurdle six feet six. The backer of the horse could, of course, have refused to carry out the wager, but he was as noble in heart as in name, as all those who knew him will confirm, and being unwilling to disappoint anyone he cheerfully accepted the extra six inches and essayed the task. He was to be allowed three trials. At the first attempt the horse's feet touched the top of the hurdle. Mr. Noble simply cantered on around the school and going up to the hurdle for the second attempt, the horse cleared it magnificiently, and so won the wager.

I think, sir, you will feel with me that this was a wonderful performance for many reasons, for the owner who was to ride was a gentleman of about 14st. 7lb. or may be more, the horse being ridden simply and quietly, and in no way urged by either whip or spur. It did not take place in the hunting field, where most of these wonderful jumps are performed, not even the excitement of being out in the open, but in a quiet riding school, where all was calculated to dispirit the horse rather than excite him to an extra performance; in fact everything that could tend to help a horse to successfully perform such a feat was absent.—Yours faithfully,

EDWARD BLACKMAN.

Knightsbridge.

Sir,

Will some of your readers oblige me by giving their opinion respecting the best treatment for a bull, that is in this part commonly named burnt.

A SUBSCRIBER.

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Messrs. H. G. Bowes, J. S. Hurndall, P. Moir; "Madras Times," "Evening Telegraph" (Brisbane), "Annual Calendar of McGill University" (Montreal Vet. Coll.), "Wexford Independent."

Original articles and reports should be written on one side only of the paper, and authenticated by the names and addresses of the writers, not necessarily for publication.

We shall be obliged by early intelligence of all matters worth bringing under the notice of the profession, and thankful to any friends who may send us cuttings from local papers, containing facts of interest.

Communications for the Editor to be addressed 20 Fulham Road, S.W.